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PLANETARY PHENOMENA—JANUARY-FEBRUARY

1918.

BY MALCOLM MCNEILL

PHASES OF THE MOON, PACIFIC TIME.

Last Quarter....Jan.	5, 3 ^h 50 ^m A.M.	Last Quarter....Feby.	3, 11 ^h 52 ^m P.M.
New Moon.....	" 12, 2 36 P.M.	New Moon.....	" 11, 2 5 A.M.
First Quarter....	" 19, 6 38 A.M.	First Quarter....	" 17, 4 57 P.M.
Full Moon.....	" 26, 7 14 P.M.	Full Moon....	" 25, 1 35 P.M.

The Earth is in perihelion on the morning of January 1.

Mercury is a morning star throughout nearly the whole of January and February. It begins the period as an evening star very close to the Sun but comes to inferior conjunction and becomes a morning star in the early morning of January 3. It then moves rapidly away from the Sun and reaches greatest west elongation, $24^{\circ} 42'$, on the morning of January 25. It then gradually draws nearer to the Sun and is not far from superior conjunction at the end of February. The greatest west elongation is rather a large one, coming only four days from aphelion. Altho *Mercury* as a morning star in the winter time is generally not well situated for observation, yet the unusually large elongation makes the planet rise a little more than an hour and one-half before sunrise during the middle of January, and the interval is more than an hour until after the end of the month. It is therefore in fair position for observation in the early morning twilight during the latter half of January.

Venus passed its greatest east elongation November 29, and in early January is about half way between that and inferior conjunction; that is, it is at its greatest brilliancy, being bright enough to be seen in full daylight. This condition will last thru the first half of the month. On January 1 it does not set until three and one half hours after sunset. The interval diminishes rather slowly during the first half of the month, being three hours on January 16; it then diminishes much more rapidly, so that by the end of January it is only a little more than one hour, but the planet is so bright that it may easily be seen in the evening twilight.

Inferior conjunction is passed on February 9, and by the end of the month the planet rises nearly two hours before sunrise. It will also be nearing its greatest brightness. The planet is in the part of its orbit which is farthest above the plane of the Earth's orbit, so that on the date of conjunction *Venus* is far to the north of the Sun, the nearest approach of the two bodies being about 8° . For a day or two about the time of conjunction we have the un-

usual phenomenon of the planet being both evening and morning star, setting after sunset and rising before sunrise. There is a possibility that the planet may be seen every day by observers favored with clear skies. This is not a frequent occurrence for a planet passing inferior conjunction.

Mars rises at about 11 P. M. on January 1, and at shortly after 7 P. M. on February 28. During 1917 it was in the part of its orbit farthest away from the Earth and was therefore not at all conspicuous; but it is now drawing near opposition, which it will reach in March, and is gaining in brightness. It is in the western part of the constellation *Virgo* and moves about 6° eastward and southward up to February 4. It then begins to move westward and northward so that by the end of the month its position is about the same as it was during early January. During the entire period it lies between the first magnitude stars *Regulus*, α *Leonis*, and *Spica*, α *Virginis*, most of the time rather nearer the latter. About the middle of January its distance from the Earth is about equal to the Earth's distance from the Sun. The distance diminishes from 105 millions of miles on January 1 to about 64 millions at the end of February, and in consequence its brightness is three times as great at the end of the period as it was at the beginning. It reaches its aphelion point on January 29.

Jupiter is in fine position for evening observation, being above the horizon until 4:30 A. M. on January 1, and until nearly 1 A. M. on February 28. It crosses the meridian at 9:19 on January 1 and at 5:28 on February 28. It is in the constellation *Taurus* between the *Pleiades* and *Hyades* groups, moves westward about 1° up to January 26, and then moves about double that distance eastward up to the end of February.

Saturn is also in excellent position for evening observation as it reaches opposition on January 31. It then crosses the meridian at midnight. On January 1 it crosses the meridian at about 2 A. M., and on February 28 about 10 P. M. It moves about 4° westward and 1° northward in the eastern part of the constellation *Cancer*, and is about 15° west and north of the first magnitude star *Regulus*, α *Leonis*. As seen in the telescope the minor axis of the rings is somewhat smaller than it was in 1917, and will diminish noticeably during the year.

Uranus passes conjunction with the Sun on February 12, and throughout the two months is too near the Sun for naked eye observation.

Neptune is in opposition with the Sun on January 26. It is in the constellation *Cancer* west and north of *Saturn* but is too faint for naked eye view.